

Listing of Claims:

1. (Currently amended) A device activated by biometric authentication, comprising:

a biometric sensor configured to obtain an internal, sub-dermal physiological characteristic of a user from which an internal, sub-dermal biometric marker of said user may be determined, said biometric sensor comprising;

an energy emitter configured to emit an electromagnetic energy signal toward said user, wherein said electromagnetic energy signal is configured to penetrate said user to measure an internal, sub-dermal physiological characteristic of said user, and

an energy sensor to detect an electromagnetic energy signal returned from said user responsive to said emitted electromagnetic energy signal; and

a memory module in communication with said biometric sensor comprising a biometric profile of an authorized user of said device,

wherein said device is configured to measure said internal, sub-dermal physiological characteristic of said user using said biometric sensor, to determine an internal, sub-dermal biometric marker of said user therefrom, to compare said biometric marker to said biometric profile of said authorized user of said device, and to generate an authentication[[e]] signal ~~said user~~ if said internal, sub-dermal biometric marker ~~corresponds to~~ matches said biometric profile of said authorized user of said device.

2. (Previously presented) The device activated by biometric authentication of claim 1, wherein said biometric marker corresponds to an internal, and non-volitional physiological process occurring within said user.

3. (Previously presented) The device activated by biometric authentication of claim 1, wherein said biometric sensor further comprises an activation sensor.

4. (Previously presented) The device activated by biometric authentication of claim 1, wherein said biometric sensor further comprises a translator whereby an energy signal received from said energy sensor is translated into an electronic signal used to determine said internal, sub-dermal biometric marker of said user.

5. (Currently amended) The device activated by biometric authentication of claim 1, wherein said energy emitter emits electromagnetic energy in the form of a light wave.

6. (Previously presented) The device activated by biometric authentication of claim 5, wherein said light wave is infra red light, ultraviolet light, nonvisible light, or visible light.

7. (Currently amended) The device activated by biometric authentication of claim [[1]] 5, wherein said energy sensor senses light waves.

8. (Previously presented) The device activated by biometric authentication of claim 7, wherein said light wave is infra red light, ultraviolet light, nonvisible light, or visible light.

9. (Canceled)

10. (Previously presented) The device activated by biometric authentication of claim 1, wherein said memory module includes a code to trigger an actuator.

11. (Currently amended) A device activated by biometric authentication, comprising:

a biometric sensor configured to measure a[[n]] continuous, time-variant, internal, sub-dermal physiological ~~characteristic~~ process occurring within [[of]] a user from which a[[n]] continuous, time-variant, internal, sub-dermal biometric marker of said user may be determined, said biometric sensor comprising;

an energy emitter configured to emit an energy signal toward said user,
and

an energy sensor to detect an energy signal returned from said user responsive to said emitted energy signal; and

a memory module comprising a biometric profile of an authorized user of said device in communication with said biometric sensor, wherein said memory module comprises computer-readable instructions to cause said device to perform a method of authenticating said user, the method comprising;

emitting a[[n]] plurality of energy signals toward said user using said energy emitter,

detecting [[a]] a plurality of returned energy signals from said user responsive to said emitted energy signals, wherein said returned energy signals comprise[[s a]] respective measurements of said continuous, time-variant, internal, sub-dermal physiological ~~characteristic~~ process occurring within [[of]] said user,

determining said continuous, time-variant, internal, sub-dermal biometric marker of said user using said returned energy signal measurements of said continuous, time-variant, internal, sub-dermal physiological process of said user;

comparing said biometric marker to said biometric profile of said authorized user of said device; and

generating an authentication~~[[ng]]~~ signal ~~said user~~ if said ~~internal, sub-~~
~~dermal~~ biometric marker ~~corresponds to~~ matches said biometric profile of said
authorized user of said device.

12. (Currently amended) A biometric authentication device, comprising:

a biometric sensor constructed to sense an internal, sub-dermal physiological
characteristic of a human from which an internal, sub-dermal biometric marker of said
human may be determined, said biometric sensor comprising;

an electromagnetic radiation emitter configured to emit electromagnetic radiation
toward said human, wherein said electromagnetic radiation is configured to penetrate said
human to measure an internal, sub-dermal physiological characteristic of said human, and

an electromagnetic radiation detector configured to detect electromagnetic
radiation returned from said human responsive to said emitted electromagnetic radiation;
and

a memory module comprising a biometric profile of an authorized user of said
device operatively communicating with said biometric sensor to store information
communicated by said biometric sensor,

wherein said biometric authentication device is configured to measure an
internal, sub-dermal physiological characteristic of said human using said biometric
sensor, to determine an internal, sub-dermal biometric marker of said human therefrom,
[[and]] to compare said biometric marker to said biometric profile of said authorized
user of said device, and to generate an authentication~~[[e]]~~ ~~said human~~ signal if said
internal, sub-dermal biometric marker ~~corresponds to~~ matches said biometric profile of
said authorized user of said device.

13. (Previously presented) The biometric authentication device of claim 12,
wherein said internal, sub-dermal biometric marker corresponds to an internal, non-
volitional physiological process occurring within said human.

14. (Canceled)

15. (Previously presented) The biometric authentication device of claim 12, wherein said emitter emits electromagnetic radiation of a wavelength and an energy level to measure an internal, non-volitional physiological process occurring within said human.

16. (Previously presented) The biometric authentication device of claim 12, wherein said biometric sensor further comprises:

an activation device configured to activate said electromagnetic radiation emitter and said electromagnetic radiation detector.

17. (Currently amended) A biometrically activated[[,]] and substantially planar card, comprising:

a first surface and an opposing second surface;

a biometric sensor integrally contained within said planar card, said biometric sensor configured to obtain a measurement of an internal, sub-dermal physiological characteristic of a user from which an internal, sub-dermal biometric marker of said user may be determined, said biometric sensor comprising:

an electromagnetic energy emitter embedded within said first surface of said planar card, wherein said electromagnetic energy emitter is configured to emit electromagnetic energy capable of penetrating said user to measure an internal, sub-dermal physiological characteristic of said user, and

an electromagnetic energy receiver embedded within said first surface of said planar card;

an activation sensor embedded within said first surface of said planar card, said activation sensor in electronic communication with said biometric sensor whereby said activation sensor controls an on and an off condition of said biometric sensor;

a memory module comprising a biometric profile of an authorized user of said planar card embedded within said planar card, said memory module in communication with said biometric sensor; and

a data communicator embedded within said planar card, said data communicator in communication with said memory module for communicating data to an external source,

wherein said planar card is configured to measure said internal, sub-dermal physiological characteristic of said user using said biometric sensor, to determine said internal, sub-dermal biometric marker of said user therefrom, [[and]] to compare said biometric marker to said biometric profile of said authorized user of said planar card, and to transmit an authentication[[e]] signal to said data communicator ~~said user~~ if said internal, sub-dermal biometric marker ~~corresponds to~~ matches said biometric profile of said authorized user of said planar card.

18. (Currently amended) The card activated by biometric authentication of claim 17, further comprising a data screen embedded on a surface of said planar card, said data screen in communication with said memory module, wherein said planar card is configured to activate said data screen responsive to said authentication signal ~~of said user~~.

19. (Currently amended) A cellular phone activated by biometric authentication, comprising:

a cellular phone having an activated state and an inactivated state controlled by an activation switch;

a biometric sensor embedded within said cellular phone configured to measure an internal, sub-dermal physiological characteristic of a user from which an internal, sub-dermal biometric marker of said user may be determined, said biometric sensor comprising an electromagnetic energy emitter and an electromagnetic energy receiver positioned on a surface of said cellular phone, wherein said electromagnetic energy emitter is configured to penetrate said user to measure an internal, sub-dermal physiological characteristic of said user;

a memory module comprising a biometric profile of an authorized user of said cellular phone embedded within said cellular phone, said memory module in communication with said biometric sensor and said activation switch,

wherein said cellular phone is configured to measure said internal, sub-dermal physiological characteristic of said user using said biometric sensor, to determine said internal, sub-dermal biometric marker of said user therefrom, [[and]] to compare said biometric marker to said biometric profile of said authorized user of said cellular phone, and to generate an authentication ~~[[e]] signal said user~~ if said internal, sub-dermal biometric marker ~~corresponds to~~ matches said biometric profile of said authorized user of said cellular phone.

20. (Currently amended) A method of authenticating a user, comprising:

generating an electromagnetic signal ~~capable of penetrating an epidermis of a user to thereby measure an internal, sub-dermal physiological characteristic of said user,~~
wherein said electromagnetic signal is configured to penetrate said user to measure an internal, sub-dermal physiological characteristic of said user, wherein an electromagnetic signal is returned from said user responsive to said generated electromagnetic signal, and wherein said returned electromagnetic signal comprises a measurement of said internal, sub-dermal physiological characteristic of said user;

detecting said returned electromagnetic signal;

translating said returned electromagnetic signal into an internal, sub-dermal biometric marker of said user, wherein said internal, sub-dermal biometric marker, is embodied as an electrical signal;

transmitting said internal, sub-dermal biometric marker to a memory module having pre-existing stored data thereon, said stored data comprising a biometric profile of an authorized user;

comparing said internal, sub-dermal biometric marker with said biometric profile of said authorized user; and

generating an authentication[[ng]] signal ~~said user~~ if said internal, sub-dermal biometric marker ~~corresponds to~~ matches said biometric profile of said authorized user.

21-22. (Canceled)

23. (Currently amended) A method of activating an electrical device based on biometric authentication, comprising:

obtaining a plurality of measurements of ~~measuring an~~ a continuous, time-variant internal, sub-dermal physiological ~~characteristic process occurring within~~ [[of]] a user;

determining a[[n]] continuous, time-variant, internal, sub-dermal biometric marker of said user using said measurements of said continuous, time-variant internal, sub-dermal physiological ~~characteristic process occurring within~~ [[of]] said user;

creating a user biometric profile of said user, wherein said user biometric profile comprises said continuous, time-variant, internal, sub-dermal biometric marker;

comparing said user biometric profile to a stored biometric profile, wherein said comparing comprises comparing said ~~internal, sub-dermal~~ biometric marker to said stored biometric profile; and

~~activating~~ generating an activation signal for said electrical device if said ~~internal, sub-dermal~~ biometric marker of said user ~~corresponds to~~ matches said stored biometric profile.

24. (Currently amended) A method for generating a coded signal comprising:

- emitting a sub-dermal penetrating electromagnetic radiation beam directed to an individual, wherein said electromagnetic energy beam is configured to penetrate said individual to measure an internal, sub-dermal physiological characteristic of said individual;
- reflecting said electromagnetic energy beam off internal, sub-dermal physiological reflective matter of said individual to produce a detectable return signal;
- detecting said return signal;
- determining an internal, sub-dermal biometric marker of said individual using said return signal;
- comparing said internal, sub-dermal biometric marker to a stored biometric profile previously developed from said individual; and
- generating a coded signal if said internal, sub-dermal biometric marker ~~corresponds to~~ matches said stored biometric profile.

25-26. (Canceled)

27. (Previously presented) The device of claim 1, wherein said internal, sub-dermal biometric marker corresponds to one selected from the group consisting of a histological trait, bone density, cardiac rhythm, diacritic notch reading, blood oxygen level, capillary density, glucose level, hematocrit level, and sub-dermal layer analysis.

28. (Currently amended) The device of claim 1, wherein said biometric sensor is configured to measure a plurality of different types of internal, sub-dermal physiological characteristics of said user.

29. (Currently amended) The device of claim 28, wherein said device is configured to select one of said plurality of different types of internal, sub-dermal physiological characteristics of said user, to measure said selected one, to determine an internal, sub-dermal biometric marker using said measurement of said selected one of said plurality of different types of internal, sub-dermal physiological characteristics of said user, and to generate an authentication signal ~~authenticate said user~~ if said internal, sub-dermal biometric marker matches ~~corresponds to~~ said biometric profile of said authorized user of said device.

30. (Currently amended) The device of claim 29, wherein said emitter is configured to prevent identification of said selected one of said plurality of different types of internal, sub-dermal physiological characteristics measured by said biometric sensor.

31. (Currently amended) The device of claim 28, wherein said device is configured to measure a selected plurality of said plurality of different types of internal, sub-dermal physiological characteristics of said user using said biometric sensor, to derive a selected plurality of internal, sub-dermal biometric markers of said user using said selected plurality of measurements, and to generate an authentication signal ~~authenticate said user~~ if each of said selected plurality of internal, sub-dermal biometric markers matches ~~corresponds to~~ said biometric profile of said authorized user.

32. (Currently amended) The device of claim 1[[1]], wherein said biometric sensor is ~~capable of configured to~~ measure[[ing]] a plurality of different types of internal, sub-dermal physiological characteristics of said user, and wherein said biometric sensor is configured to prevent identification of said plurality of different types of internal, sub-dermal physiological characteristics of said user measured by said biometric sensor.

33. (Currently amended) The device of claim 32, wherein the device is further configured to method further comprises,

select[[ing]] one of said plurality of different internal, sub-dermal physiological characteristics of said user[[:]],

emit[[ting]] electromagnetic energy from said electromagnetic energy emitter to measure said selected one of said plurality of different internal, sub-dermal physiological characteristics of said user[[:]].

receive[[ing]] a returned electromagnetic energy signal from said user responsive to said emitted electromagnetic energy, wherein said returned electromagnetic energy signal comprises a measurement of said selected one of said plurality of different types of internal, sub-dermal biometric characteristics of said user[[:]].

determining[[ing]] an internal, sub-dermal biometric marker of said user using said returned electromagnetic energy signal[[:]], and

generate an authentication[[ng]] signal ~~said user~~ if said internal, sub-dermal biometric marker ~~corresponds to~~ matches said biometric profile of said authorized user of said device.

34. (Currently amended) The device of claim 32, wherein the device is further configured to method further comprises,

select[[ing]] a first one of said plurality of different types of internal, sub-dermal physiological characteristics and a second one of said plurality of different types of internal, sub-dermal physiological characteristics[[;]],

emit[[ting]] a first electromagnetic energy signal from said electromagnetic energy emitter to measure said first one of said plurality of different types of internal, sub-dermal physiological characteristics of said user[[;]],

receive[[ing]] a returned first electromagnetic energy signal from said user responsive to said first emitted electromagnetic energy signal comprising a measurement of said first one of said plurality of different types of internal, sub-dermal physiological characteristics of said user[[;]],

determine[[ing]] a first internal, sub-dermal biometric marker of said user using said returned first electromagnetic energy signal[[;]],

emit[[ting]] a second electromagnetic energy signal from said electromagnetic energy emitter to measure said second one of said plurality of different types of internal, sub-dermal physiological characteristics of said user[[;]],

receive[[ing]] a returned second electromagnetic energy signal from said user responsive to said second emitted electromagnetic energy signal comprising a measurement of said second one of said plurality of different types of internal, sub-dermal physiological characteristics of said user[[;]],

determine[[ing]] a second internal, sub-dermal biometric marker of said user using said returned second electromagnetic energy signal[[;]],

compare said first biometric marker and said second biometric marker to said biometric profile of said authorized user of the device, and

generate an authentication[[ng]] signal ~~said user~~ if said first biometric marker and said second biometric marker match ~~correspond to~~ said biometric profile of said authorized user of said device.